

ABSTRACT OF THE DISCLOSURE

5 An ultra-hard semiconductive polycrystalline diamond
(PCD) material formed with semiconductive diamond particles
doped with and additive, as for example, Li, Be or Al and/or
insulative diamond particles having semiconductive surfaces,
tools incorporating the same, and methods for forming the
same, are provided. The ultra-hard PCD material may be formed
10 using a layer of insulative diamond grit feedstock that
includes additives therein, then sintering to convert a
plurality of the diamond crystals to include a semiconductive
surface. In another embodiment, the ultra-hard PCD material
is formed by sintering semiconductive diamond grit feedstock
15 consisting of diamond crystals doped with an additive as for
example Li, Al or Be. The ultra-hard semiconductive PCD
cutting layer exhibits increased cuttability, especially in
EDM and EDG cutting operations. A cutting element is provided
having such a PCD layer. Furthermore, a bit is provided
20 having a cutting element having such a PCD layer.

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